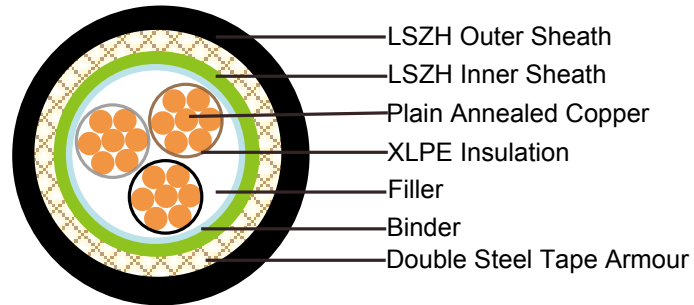




### 600/1000V XLPE Insulated, LSZH Sheathed, Double Steel Tape Armoured Power Cables (3 Cores)

FTX400 1RZ1MZ1-R (CU/XLPE/LSZH/DSTA/LSZH 600/1000V Class 2)



### APPLICATION

The cables are mainly used in power stations, mass transit underground passenger systems, airports, petrochemical plants, hotels, hospitals, and high-rise buildings.

### STANDARDS

Basic design adapted to IEC 60502-1

### FIRE PERFORMANCE

|                                                                          |                                                                                                                                                                          |
|--------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Flame Retardance (Single Vertical Wire Test)                             | EN 60332-1-2; IEC 60332-1-2; BS EN 60332-1-2; VDE 0482-332-1 ; NBN C 30-004 (cat. F1); NF C32-070-2.1(C2); CEI 20-35/1-2; EN 50265-2-1*; DIN VDE 0482-265-2-1*           |
| Reduced Fire Propagation (Vertically-mounted bundled wires & cable test) | EN 60332-3-24 (cat. C); IEC 60332-3-24; BS EN 60332-3-24; VDE 0482-332-3; NBN C 30-004 (cat. F2); NF C32-070-2.2(C1); CEI 20-22/3-4; EN 50266-2-4*; DIN VDE 0482-266-2-4 |
| Halogen Free                                                             | IEC 60754-1; EN 50267-2-1; DIN VDE 0482-267-2-1; CEI 20-37/2-1 ; BS 6425-1*                                                                                              |
| No Corrosive Gas Emission                                                | IEC 60754-2; EN 50267-2-2; DIN VDE 0482-267-2-2; CEI 20-37/2-2 ; BS 6425-2*                                                                                              |
| Minimum Smoke Emission                                                   | IEC 61034-1&2; EN 61034 -1&2; DIN VDE 0482-1034-1&2; CEI 20-37/3-1&2; EN 50268-1&2*; BS 7622-1&2*                                                                        |
| No Toxic gases                                                           | NES 02-713; NF C 20-454                                                                                                                                                  |

Note: Asterisk \* denotes superseded standard.

### VOLTAGE RATING

600/1000V

## CABLE CONSTRUCTION

**Conductor:** Plain annealed copper wire, normal stranded or compact stranded according to IEC(EN) 60228 class 2.

**Insulation:** Extruded cross-linked XLPE compound.

**Filler, binder and inner covering:** PP, PET, LSZH

**Armouring:** Double steel tape

**Outer Sheath:** Thermoplastic LSZH compound type LTS3 as per BS 7655-6.1 (Thermosetting LSZH compound type SW2-SW4 as per BS 7655-2.6 can be offered.). UV resistance, hydrocarbon resistance, oil resistance, anti rodent and anti termite properties can be offered as option.

## COLOUR CODE

**Insulation Colour as per BS7671**

|               | With Earth Conductor                   | Without Earth Conductor         |
|---------------|----------------------------------------|---------------------------------|
| 2Cores        | -                                      | Brown, Blue                     |
| 3Cores        | Yellow/Green, Brown, Blue              | Brown, Gray, Black              |
| 4Cores        | Yellow/Green, Brown, Gray, Black       | Brown, Gray, Black, Blue        |
| 5Cores        | Yellow/Green, Brown, Gray, Black, Blue | Brown, Gray, Black, Blue, Black |
| Above 5 Cores | Yellow/Green, Black Numbered           | Black Numbered                  |

**Sheath Colour:** Black (other colors upon request)

## PHYSICAL AND THERMAL PROPERTIES

**Temperature range during operation:** Max.90°C for XLPE  
250°C in short-circuit for 5s max.

**Minimum bending radius:** 10x Overall Diameter

## CONSTRUCTION PARAMETERS

| Conductor                   |                                  |                                  |                                    |      | FTX400 1RZ1MZ1-R             |      |                              |                          |                          |                |
|-----------------------------|----------------------------------|----------------------------------|------------------------------------|------|------------------------------|------|------------------------------|--------------------------|--------------------------|----------------|
| No. of Core X Cross Section | Phases                           | Neutral                          | Nominal Diameter Overall Conductor |      | Nominal Insulation Thickness |      | Nominal Steel Tape Thickness | Nominal Sheath Thickness | Nominal Overall Diameter | Approx. Weight |
|                             | No./ Nominal Diameter of Strands | No./ Nominal Diameter of Strands | Pha.                               | Neu. | Pha.                         | Neu. |                              |                          |                          |                |
| mm <sup>2</sup>             | No/mm                            | No/mm                            | mm                                 | mm   | mm                           | mm   | mm                           | mm                       | mm                       | Kg/km          |
| 3x10+1x6                    | 7/1.35                           | 7/1.04                           | 3.75                               | 2.90 | 0.7                          | 0.7  | 0.2                          | 1.8                      | 20.1                     | 740            |
| 3x16+1x10                   | 7/1.70                           | 7/1.35                           | 4.75                               | 3.75 | 0.7                          | 0.7  | 0.2                          | 1.8                      | 22.5                     | 1,004          |
| 3x25+2x16                   | 7/2.14                           | 7/1.70                           | 5.85                               | 4.75 | 0.9                          | 0.7  | 0.2                          | 1.8                      | 25.8                     | 1,421          |
| 3x35+1x16                   | 7/2.52                           | 7/1.70                           | 6.90                               | 4.75 | 0.9                          | 0.7  | 0.2                          | 1.8                      | 27.7                     | 1,745          |
| 3x35+1x25                   | 7/2.52                           | 7/2.14                           | 6.90                               | 5.85 | 0.9                          | 0.9  | 0.2                          | 1.8                      | 28.6                     | 1,864          |
| 3x50+1x25                   | 19/1.78                          | 7/2.14                           | 8.15                               | 5.85 | 1.0                          | 0.9  | 0.2                          | 1.8                      | 31.3                     | 2,358          |



|             |         |         |      |      |     |     |     |     |      |        |
|-------------|---------|---------|------|------|-----|-----|-----|-----|------|--------|
| 3x50+1x35   | 19/1.78 | 7/2.52  | 8.15 | 6.90 | 1.0 | 0.9 | 0.2 | 1.9 | 32.0 | 2.72   |
| 3x70+1x35   | 19/2.14 | 7/2.52  | 9.75 | 6.90 | 1.1 | 0.9 | 0.2 | 2.0 | 35.9 | 3166   |
| 3x70+1x50   | 19/2.14 | 19/1.78 | 9.75 | 8.15 | 1.1 | 1.0 | 0.2 | 2.0 | 36.8 | 3,341  |
| 3x95+1x50   | 19/2.52 | 19/1.78 | 11.4 | 8.15 | 1.1 | 1.0 | 0.5 | 2.1 | 41.4 | 4,611  |
| 3x120+1x70  | 37/2.03 | 19/2.14 | 12.8 | 9.75 | 1.2 | 1.1 | 0.5 | 2.3 | 45.6 | 5682   |
| 3x150+1x95  | 37/2.25 | 19/2.52 | 14.3 | 11.4 | 1.4 | 1.1 | 0.5 | 2.4 | 50.8 | 7,072  |
| 3x150+1x120 | 37/2.25 | 37/2.03 | 14.3 | 12.8 | 1.4 | 1.2 | 0.5 | 2.5 | 51.8 | 7,357  |
| 3x185+1x95  | 37/2.52 | 19/2.52 | 15.9 | 11.4 | 1.6 | 1.1 | 0.5 | 2.6 | 54.7 | 8,348  |
| 3x185+1x120 | 37/2.52 | 37/2.03 | 15.9 | 12.8 | 1.6 | 1.2 | 0.5 | 2.6 | 55.8 | 8638   |
| 3x240+1x120 | 61/2.25 | 37/2.03 | 18.2 | 12.8 | 1.7 | 1.2 | 0.5 | 2.7 | 61.0 | 10,660 |
| 3x240+1x150 | 61/2.25 | 37/2.25 | 18.2 | 14.3 | 1.7 | 1.4 | 0.5 | 2.8 | 62.2 | 11024  |
| 3x300+1x150 | 61/2.52 | 37/2.25 | 20.4 | 14.3 | 1.8 | 1.4 | 0.5 | 2.9 | 66.8 | 12,809 |
| 3x300+1x185 | 61/2.52 | 37/2.52 | 20.4 | 15.9 | 1.8 | 1.6 | 0.5 | 3.0 | 68.1 | 13,256 |

### ELECTRICAL PROPERTIES

| No. of Core X<br>Cross Section | Conductor                             |                                       |                          |      | Max.DC resistance of<br>conductor @20°C |       |
|--------------------------------|---------------------------------------|---------------------------------------|--------------------------|------|-----------------------------------------|-------|
|                                | Phases                                | Neutral                               | Dia.Overall<br>Conductor |      |                                         |       |
|                                | No./Nominal<br>Diameter of<br>Strands | No./Nominal<br>Diameter of<br>Strands | Pha.                     | Neu. | Pha.                                    | Neu.  |
| mm <sup>2</sup>                | No/mm                                 | No/mm                                 | mm                       | mm   | Ω/km                                    | Ω/km  |
| 3x10+1x6                       | 7/1.35                                | 7/1.04                                | 3.75                     | 2.90 | 1.83                                    | 3.08  |
| 3x16+1x10                      | 7/1.70                                | 7/1.35                                | 4.75                     | 3.75 | 1.15                                    | 1.83  |
| 3x25+2x16                      | 7/2.14                                | 7/1.70                                | 5.85                     | 4.75 | 0.727                                   | 1.15  |
| 3x35+1x16                      | 7/2.52                                | 7/1.70                                | 6.90                     | 4.75 | 0.524                                   | 1.15  |
| 3x35+1x25                      | 7/2.52                                | 7/2.14                                | 6.90                     | 5.85 | 0.524                                   | 0.727 |
| 3x50+1x25                      | 19/1.78                               | 7/2.14                                | 8.15                     | 5.85 | 0.387                                   | 0.727 |
| 3x50+1x35                      | 19/1.78                               | 7/2.52                                | 8.15                     | 6.90 | 0.387                                   | 0.524 |
| 3x70+1x35                      | 19/2.14                               | 7/2.52                                | 9.75                     | 6.90 | 0.268                                   | 0.524 |
| 3x70+1x50                      | 19/2.14                               | 19/1.78                               | 9.75                     | 8.15 | 0.268                                   | 0.387 |
| 3x95+1x50                      | 19/2.52                               | 19/1.78                               | 11.4                     | 8.15 | 0.193                                   | 0.387 |
| 3x120+1x70                     | 37/2.03                               | 19/2.14                               | 12.8                     | 9.75 | 0.153                                   | 0.268 |
| 3x150+1x95                     | 37/2.25                               | 19/2.52                               | 14.3                     | 11.4 | 0.124                                   | 0.193 |
| 3x150+1x120                    | 37/2.25                               | 37/2.03                               | 14.3                     | 12.8 | 0.124                                   | 0.153 |
| 3x185+1x95                     | 37/2.52                               | 19/2.52                               | 15.9                     | 11.4 | 0.0991                                  | 0.193 |
| 3x185+1x120                    | 37/2.52                               | 37/2.03                               | 15.9                     | 12.8 | 0.0991                                  | 0.153 |
| 3x240+1x120                    | 61/2.25                               | 37/2.03                               | 18.2                     | 12.8 | 0.0754                                  | 0.153 |
| 3x240+1x150                    | 61/2.25                               | 37/2.25                               | 18.2                     | 14.3 | 0.0754                                  | 0.124 |
| 3x300+1x150                    | 61/2.52                               | 37/2.25                               | 20.4                     | 14.3 | 0.0601                                  | 0.124 |

|             |         |         |      |      |        |        |
|-------------|---------|---------|------|------|--------|--------|
| 3x300+1x185 | 61/2.52 | 37/2.52 | 20.4 | 15.9 | 0.0601 | 0.0991 |
|-------------|---------|---------|------|------|--------|--------|

## ELECTRICAL PROPERTIES

**Conductor Operating Temperature : 90°C**

**Ambient Temperature : 30°C**

### Current-Carrying Capacities (Amp)

| Conductor cross-sectional area | Reference Method 1 (clipped direct)        |                                         | Reference Method 11 (on a perforated horizontal cable tray or Reference Method 13 [free air] ) |                                         | In single-way ducts                        |                                         | Laid direct in ground                      |                                         |
|--------------------------------|--------------------------------------------|-----------------------------------------|------------------------------------------------------------------------------------------------|-----------------------------------------|--------------------------------------------|-----------------------------------------|--------------------------------------------|-----------------------------------------|
|                                | one 2-core cable single phase a.c. or d.c. | one 3-core or 4-core cable 3-phase a.c. | one 2-core cable single phase a.c. or d.c.                                                     | one 3-core or 4-core cable 3-phase a.c. | one 2-core cable single phase a.c. or d.c. | one 3-core or 4-core cable 3-phase a.c. | one 2-core cable single phase a.c. or d.c. | one 3-core or 4-core cable 3-phase a.c. |
| 1                              | 2                                          | 3                                       | 4                                                                                              | 5                                       | 6                                          | 7                                       | 8                                          | 9                                       |
| mm <sup>2</sup>                | A                                          | A                                       | A                                                                                              | A                                       | A                                          | A                                       | A                                          | A                                       |
| 10                             | 85                                         | 73                                      | 90                                                                                             | 78                                      | -                                          | 65                                      | -                                          | 80                                      |
| 16                             | 110                                        | 94                                      | 115                                                                                            | 99                                      | 115                                        | 94                                      | 140                                        | 115                                     |
| 25                             | 146                                        | 124                                     | 152                                                                                            | 131                                     | 145                                        | 125                                     | 180                                        | 150                                     |
| 35                             | 180                                        | 154                                     | 188                                                                                            | 162                                     | 175                                        | 150                                     | 215                                        | 180                                     |
| 50                             | 219                                        | 187                                     | 228                                                                                            | 197                                     | 210                                        | 175                                     | 255                                        | 215                                     |
| 70                             | 279                                        | 238                                     | 291                                                                                            | 251                                     | 260                                        | 215                                     | 315                                        | 265                                     |
| 95                             | 338                                        | 289                                     | 354                                                                                            | 304                                     | 310                                        | 260                                     | 380                                        | 315                                     |
| 120                            | 392                                        | 335                                     | 410                                                                                            | 353                                     | 355                                        | 300                                     | 430                                        | 360                                     |
| 150                            | 451                                        | 386                                     | 472                                                                                            | 406                                     | 400                                        | 335                                     | 480                                        | 405                                     |
| 185                            | 515                                        | 441                                     | 539                                                                                            | 463                                     | 455                                        | 380                                     | 540                                        | 460                                     |
| 240                            | 607                                        | 520                                     | 636                                                                                            | 546                                     | 520                                        | 440                                     | 630                                        | 530                                     |
| 300                            | 698                                        | 599                                     | 732                                                                                            | 628                                     | 590                                        | 495                                     | 700                                        | 590                                     |



### Voltage Drop (Per Amp Per Meter)

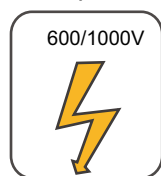
| Conductor cross-sectional area | 2-core cable d.c. | 2 cables, single-phase a.c. |       |       | 3 or 4 cables, 3-phase a.c. |       |       | 2 cables, single-phase a.c. | 3 or 4 cables, 3-phase a.c. |
|--------------------------------|-------------------|-----------------------------|-------|-------|-----------------------------|-------|-------|-----------------------------|-----------------------------|
|                                |                   |                             |       |       |                             |       |       | In ducts or in ground       | In ducts or in ground       |
| 1                              | 2                 | 3                           |       |       | 4                           |       |       | 5                           | 6                           |
| mm <sup>2</sup>                | mV/A/m            | mV/A/m                      |       |       | mV/A/m                      |       |       | mV/A/m                      | mV/A/m                      |
| 6                              | 7.9               | 7.9                         |       |       | 6.8                         |       |       | 7.9                         | 6.5                         |
| 10                             | 4.7               | 4.7                         |       |       | 4.0                         |       |       | 4.7                         | 3.9                         |
| 16                             | 2.9               | 2.9                         |       |       | 2.5                         |       |       | 2.9                         | 2.6                         |
|                                |                   | r                           | x     | z     | r                           | x     | z     |                             |                             |
| 25                             | 1.850             | 1.350                       | 0.160 | 1.900 | 1.600                       | 0.140 | 1.650 | 1.900                       | 1.600                       |
| 35                             | 1.350             | 1.350                       | 0.155 | 1.350 | 1.150                       | 0.135 | 1.150 | 1.350                       | 1.200                       |
| 50                             | 0.980             | 0.990                       | 0.155 | 1.000 | 0.860                       | 0.135 | 0.870 | 1.000                       | 0.870                       |
| 70                             | 0.670             | 0.670                       | 0.150 | 0.690 | 0.590                       | 0.130 | 0.600 | 0.690                       | 0.610                       |
| 95                             | 0.490             | 0.500                       | 0.150 | 0.520 | 0.430                       | 0.130 | 0.450 | 0.520                       | 0.450                       |
| 120                            | 0.390             | 0.400                       | 0.145 | 0.420 | 0.340                       | 0.130 | 0.370 | 0.420                       | 0.360                       |
| 150                            | 0.310             | 0.320                       | 0.145 | 0.350 | 0.280                       | 0.125 | 0.300 | 0.350                       | 0.300                       |
| 185                            | 0.250             | 0.260                       | 0.145 | 0.290 | 0.220                       | 0.125 | 0.260 | 0.290                       | 0.250                       |
| 240                            | 0.195             | 0.200                       | 0.140 | 0.240 | 0.175                       | 0.125 | 0.210 | 0.240                       | 0.210                       |
| 300                            | 0.155             | 0.160                       | 0.140 | 0.210 | 0.140                       | 0.120 | 0.185 | 0.210                       | 0.190                       |
| 400                            | 0.120             | 0.130                       | 0.140 | 0.190 | 0.115                       | 0.120 | 0.165 | 0.190                       | 0.180                       |

Note :

r = conductor resistance at operating temperature

x = reactance

z = impedance



Rated Voltage



Standard



Flame Retardancy  
NF C32-070-2.1(C2)  
IEC60332-1-2/EN50265-2-1



Reduced Fire Propagation  
NF C32-070-2.2(C1)  
IEC60332-3-24  
EN50266-2-4



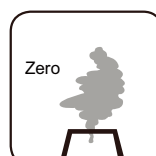
Low Toxicity  
NES 02-713/NF C 20-454



Low Corrosivity  
IEC60754-2  
EN50267-2-2/3  
NF C 32-074



Low Smoke Emission  
IEC 61034-1&2  
EN 50268-1&2/NF C32-073



Halogen Free  
IEC60754-1  
EN50267-2-1

## TYPE CODES FOR FLAME RETARDANT POWER & CONTROL CABLES

| FTX | A                                  | B            | C                      | D                                | E                      | F                                |
|-----|------------------------------------|--------------|------------------------|----------------------------------|------------------------|----------------------------------|
|     |                                    |              |                        |                                  |                        | F Conductor                      |
|     |                                    |              |                        |                                  |                        | U: Solid to IEC 60228 class 1    |
|     |                                    |              |                        |                                  |                        | R: Stranded to IEC 60228 class 2 |
|     |                                    |              |                        |                                  |                        | F: Stranded to IEC 60228 class 5 |
|     |                                    |              |                        |                                  | E Sheath               |                                  |
|     |                                    |              |                        |                                  | Z1: Thermoplastic LSZH |                                  |
|     |                                    |              |                        | D Screen                         |                        |                                  |
|     |                                    |              |                        | O: Overall aluminium tape screen |                        |                                  |
|     |                                    |              |                        | C: Overall copper tape screen    |                        |                                  |
|     |                                    |              | C Insulation           |                                  |                        |                                  |
|     |                                    |              | R: XLPE                |                                  |                        |                                  |
|     |                                    |              | Z1: Thermoplastic LSZH |                                  |                        |                                  |
|     |                                    | B Voltage    |                        |                                  |                        |                                  |
|     |                                    | 05: 300/500V |                        |                                  |                        |                                  |
|     |                                    | 07: 450/750V |                        |                                  |                        |                                  |
|     |                                    | 1: 600/1000V |                        |                                  |                        |                                  |
|     | A Type                             |              |                        |                                  |                        |                                  |
|     | 100: Single core unsheathed        |              |                        |                                  |                        |                                  |
|     | 200: 300/500V & 450/750V multicore |              |                        |                                  |                        |                                  |
|     | 300: Single core sheathed          |              |                        |                                  |                        |                                  |
|     | 400: 600/1000V multicore           |              |                        |                                  |                        |                                  |

